CLAIMS

I claim:

1. A method for changing a configuring of an error correction code (ECC) logic circuit for performing an error-check of a changed data-width comprising:

sequentially interconnecting a set of N1 identical error-check blocks where N1 is a first positive integer; and

reconfiguring said ECC logic circuit by changing said ECC logic circuit to a set of N2 sequentially interconnected circuits comprising N2 of said identical error-check blocks where N2 is a second positive number.

2. The method of claim 1 wherein:

said step of sequentially interconnecting a set of N1 identical error-check blocks is a step of interconnecting said N1 error-check blocks only between sequentially neighboring blocks for transmitting signals only between said neighboring error-check blocks; and

said step of reconfiguring said ECC logic circuit by changing said ECC logic circuit to a set of N2 sequentially interconnected circuits is a step of interconnecting said N2 error-check blocks only between sequentially neighboring blocks for transmitting signals only between said neighboring error-check blocks.

3. A method for operating a memory device comprising a plurality of memory cells, comprising:

performing an error-check on said memory cells; and

repairing a faulty memory cell storing an error data bit.

4. The method of claim 3 wherein:

said step of repairing a faulty memory cell further comprising a step of performing said step of repairing said faulty memory cell automatically by writing a correct bit into said faulty memory cell.

5. A memory device comprising a plurality of memory cells each having a floating gate for storing a plurality of electric charges therein, said memory device further comprising:

an error-check logic circuit includes a set of identical error-check blocks sequentially interconnected for checking errors of data storage in said memory cells.

6. The memory device of claim 5 further comprising:

a multiple-level voltage means for applying at least two electrical charge levels on said floating gates for representing at least two binary bits stored in said memory cells.

7. The memory device of claim 6 further comprising:

a multiple-level electrical-charge sensing means for sensing at least two electric-charge levels stored in said floating gates for detecting at least two binary bits stored in said memory cells.

8. The memory device of claim 7 wherein:

said multiple-level electrical-charge sensing means further comprising a bit-pattern means for generating a bit-pattern based on said electric-charge levels sensed by said multiple-level electrical-charge sensing means.

9. The memory device of claim 7 wherein:

said bit-pattern means is further provided for generating a sequence of bit-patterns based on said electric-charge levels wherein each of said bit patterns based on a first electrical-charge level differing by only a single bit from a second bit-pattern representing a second electrical-charge level sequentially adjacent to said first electrical-charge level.

10. A memory device comprising a plurality of memory cells each having at least two memory-cell characteristic-states each representing a bit-pattern stored therein, said memory device further comprising:

an error-check logic circuit includes a set of identical error-check blocks sequentially interconnected for checking errors of data storage in said memory cells.

11. A content addressable memory (CAM) device comprising a plurality of memory-cell arrays for storing an array content therein provided for an data-access to an array based on a match with said array content, said CAM device further comprising:

an error-check logic circuit for checking errors of said data access to each of said memory-cell arrays.

12. The content addressable memory (CAM) device of claim 11 further comprising:

an error-code storage means for storing an error-code check (ECC) bit for each of said memory-cell array used by said error-check logic circuit for checking errors of said data access to each of said memory-cell arrays.

13. The content addressable memory (CAM) device of claim 11 wherein:

each of said memory-cell array further storing an error-code check (ECC) bit generated by said error-check logic circuit for checking errors of said data access to each of said memory-cell arrays.

14. The content addressable memory (CAM) device of claim 11 wherein:

said error-code storage means is a random access memory (RAM) device for storing said error-code check (ECC) bit for each of said memory-cell array used by said error-check logic circuit for checking errors of said data access to each of said memory-cell arrays.

15. A memory device comprising a plurality of memory cells each having a floating gate for storing a plurality of electric charges therein, said memory device further comprising:

a multiple-level electrical-charge sensing means for sensing at least two electric-charge levels stored in said floating gates as a sequence of charge levels for detecting at least two binary bits for recording a plurality of bit patterns stored in said memory cells;

said multiple-level electrical-charge sensing means further includes a bit-pattern means for generating a sequence of bit-patterns based on said sequence of electric-charge levels wherein each of said bit patterns based on a first electrical-charge level differing by only a single bit from a second bit-pattern represented by a second electrical-charge level sequentially adjacent to said first electrical-charge level.

16. An analog sensing device comprising:

an analog signal sensing means for sensing a sequence of analog signal-levels for generating a sequence of bit patterns corresponding to said analog signal-levels wherein each of said signal levels representing a bit pattern differing by a single bit from another bit pattern representing an adjacent signal level.